

Q6. $\sum_{n=1}^{\infty} \frac{1+e^n}{1+2^n}$

① = $\sum_{n=1}^{\infty} \frac{1}{1+2^n} + \sum_{n=1}^{\infty} \frac{e^n}{1+2^n}$

$\lim_{n \rightarrow \infty} \frac{1}{1+2^n} = 0$

$\lim_{n \rightarrow \infty} \frac{e^n}{1+2^n} = \frac{\infty}{\infty}$

L.H: $\frac{e^n}{1+2^n \ln(2)} = \frac{\infty}{\infty}$

\hookrightarrow diverges

Since ① converges but ② diverges,

$\therefore \sum_{n=1}^{\infty} \frac{1+e^n}{1+2^n}$ is divergent